

What is claimed is:

1. A method for code division packet switching at an originating mobile subscriber terminal, said originating mobile subscriber terminal being located within a microport cell of a terrestrial wireless network at a given instant of time, where said network interfaces with an originating access radio port, comprising the steps of:

spreading a transmission signal by a PN-code assigned to a radio access port;

inserting an identifier of a few bits for identifying a user;

modulating said PN-code spread transmission signal;

forwarding said modulated PN-code spread transmission signal and marking a time origin of said forwarding of said modulated PN-code spread transmission signal;

receiving an acknowledgment, within a timeout period, from said originating access radio port, said acknowledgment comprising an assignment of an orthogonal code to said originating mobile subscriber terminal and a timing adjustment;

spreading a payload data signal by said assigned orthogonal code;

spreading the orthogonal spread payload data signal by the PN-code thereby associating the user with payload data;

modulating said twice spread payload data signal;

adjusting a transmission time by said timing adjustment received from said originating radio access port; and

forwarding said modulated twice spread payload data signal to said originating access radio port.

2. The method according to claim 1, wherein if no acknowledgment is received from said originating radio access port within said timeout period, said modulated PN-code spread transmission signal is forwarded again marking the time origin of said forwarding again.

3. The method according to claim 1, wherein said first spreading step by said PN-code forms a preamble, which is prepended to a packet.

4. The method according to claim 1, wherein said orthogonal code is a Hadamard code.

5. A method for code division packet switching at an originating access radio port of a terrestrial wireless network, where said originating access radio port interfaces with a plurality of originating mobile subscriber terminals located within a microport cell of said terrestrial wireless network, comprising the steps of:

demodulating a transmission signal;

acquiring a preamble from said transmission signal;

acquiring a header from said transmission signal;

forwarding an acknowledgment to one of said plurality of said originating mobile subscriber terminals, said acknowledgment comprising an assignment of an orthogonal code to said one of said plurality of originating mobile subscriber terminals and a timing adjustment;

receiving a further transmission signal comprising payload data; and

despreading said further transmission signal by both said assigned orthogonal code and a PN-code.

6. The method according to claim 5, further comprising the steps of:  
creating an ATM packet; and  
forwarding said ATM packet through said network via an access node.

7. The method according to claim 5, wherein said orthogonal code sequence is a Hadamard code.

8. The method according to claim 6, further comprising the step of releasing said assignment of said orthogonal code.

9. A method for code division packet switching at an originating mobile subscriber terminal, said originating mobile subscriber terminal being located within a microport cell of a terrestrial wireless network at a given instant in time, where said network interfaces with an originating radio access port, comprising the steps of:

spreading a transmission signal by a PN-code assigned to a access radio port;  
inserting an identifier of a few bits for identifying a user;  
modulating said PN-code spread transmission signal;  
forwarding said modulated PN-code spread transmission signal and marking a time origin of said forwarding of said modulated PN-code spread transmission signal;

receiving an acknowledgment, within a timeout period, from said originating access radio port, said acknowledgment comprising an assignment of an orthogonal code to said originating mobile subscriber terminal and a timing adjustment;

spreading a payload data signal and an end of packet flag by said assigned orthogonal code;

spreading the orthogonal spread payload data signal and said end of packet flag by the PN-code thereby associating the user with payload data;

modulating said twice spread payload data signal and said end of packet flag;

adjusting a transmission time by said timing adjustment received from said originating radio access port; and

forwarding said modulated twice spread payload data signal and said end of packet flag to said originating access radio port.

10. The method according to claim 9, wherein if no acknowledgment is received from said originating radio access port within said timeout period, said modulated PN-code spread transmission signal is forwarded again marking the time origin of said forwarding again.

11. A method for code division packet switching at a destination radio access port of a terrestrial wireless network, where said destination radio access port interfaces with a plurality of destination mobile subscriber terminals located within a microport cell of said terrestrial wireless network, comprising the steps of:

transmitting a paging message to one of said plurality of destination mobile subscriber terminals over a paging channel indicating that there is payload data for said one of said plurality of destination mobile subscriber terminals;

receiving an acknowledgment from said one of said plurality of destination mobile subscriber terminals;

spreading said payload data extracted from an ATM packet with a uniquely assigned orthogonal code; and

transmitting said spread payload data to said one of said plurality of destination mobile subscriber terminals.

12. The method according to claim 11, further comprising the steps of:  
 waiting for a timeout period for a negative acknowledgement; and  
 releasing said uniquely assigned orthogonal code if no negative acknowledgment is received within said timeout period.

13. A method for code division packet switching at a destination mobile subscriber terminal, said destination mobile subscriber terminal being located within a microport cell of a terrestrial wireless network at a given instant in time, where said network interfaces with a destination radio access port, comprising the steps of:

monitoring a paging channel for paging messages indicating that there is payload data for said destination mobile subscriber terminal;

receiving a paging message via said paging channel;

transmitting an acknowledgment to said destination radio access port;

receiving twice spread payload data;  
despreading said payload data using a uniquely assigned orthogonal code and a PN-code; and  
decoding said despread payload data.

14. The method according to claim 13, further comprising the step of presenting said payload data to a user.

15. The method according to claim 13, wherein said monitoring step is accomplished by monitoring said paging channel using an arbitrary orthogonal code.

16. The method according to claim 13, wherein said acknowledgment comprises an assignment of a unique orthogonal code.

17. The method according to claim 13, further comprising the step of switching, by said destination mobile subscriber terminal, to said uniquely assigned orthogonal code before despreading said twice spread payload data.

18. The method according to claim 5, wherein said network is an ATM network.

19. A method for code division packet switching at a destination access radio port of a terrestrial wireless network, where said destination access radio port interfaces

with a plurality of destination mobile subscriber terminals located within a microport cell, comprising the steps of:

receiving a packet switched transmission signal from an access node via a network;

assigning a unique orthogonal code to one of said plurality of said destination mobile subscriber terminal;

spreading payload data destined for said one of said plurality of destination mobile subscriber terminals using both said uniquely assigned orthogonal code and a PN-code;

forwarding a paging message via a paging channel to said one of said plurality of said destination mobile subscriber terminals indicating that there is payload data destined for said one of said plurality of said destination mobile subscriber terminals;

receiving an acknowledgment from said one of said plurality of said destination mobile subscriber terminals;

modulating said twice spread payload data; and

transmitting said twice spread payload data over air to said one of said plurality of said destination mobile subscriber terminals.

20. A method for code division packet switching at a destination access radio port of a terrestrial wireless network, where said destination access radio port interfaces with a plurality of destination mobile subscriber terminals located within a microport cell, comprising the steps of:

acquiring a preamble and a header, which has a PN-code;

processing said PN-code to insure synchronization;  
sending an acknowledgement; and  
receiving payload data.

21. The method according to claim 20, wherein said preamble is acquired using a serial/parallel acquisition circuit.

22. The method according to claim 21, wherein said synchronization is made to a standard reference time maintained by said destination access radio port.

23. The method according to claim 20, wherein said payload data are received by despreading by a unique orthogonal code and said PN-code.

24. A method for code division packet switching used for interfacing a terrestrial wireless network with a packet switched network, where said wireless network interfaces with a plurality of radio access ports, each of said radio access ports interfacing to a plurality of mobile subscriber terminals, comprising the steps of:

spreading, by said originating mobile subscriber terminal, a transmission signal by a PN-code assigned to an intended receiving port;

inserting, by said originating mobile subscriber terminal, an identifier of a few bits for identifying a user;

modulating, by said originating mobile subscriber terminal, said PN-code spread transmission signal;



forwarding, by said originating mobile subscriber terminal, said modulating PN-code spread transmission signal and marking the time origin of said forwarding;

demodulating, by said originating access radio port, said modulated PN-code spread transmission signal;

acquiring, by said originating access radio port, a preamble from said transmitted signal;

despreading, by said originating access radio port, a header from transmitted signal;

forwarding,, by said originating access radio port, an acknowledgment to one of said plurality of said originating mobile subscriber terminals, said acknowledgment comprising an assignment of an orthogonal code to said one of said plurality of originating mobile subscriber terminals and a timing adjustment;

receiving, by said originating mobile subscriber terminal, said acknowledgment, within a timeout period, from said originating access radio port;

spreading, by said originating mobile subscriber terminal, a payload data signal by said assigned orthogonal code;

spreading, by said originating mobile subscriber terminal, the orthogonal spread payload data signal by the PN-code associating the user with payload data;

modulating, by said originating mobile subscriber terminal, said twice spread payload data signal;

adjusting, by said originating mobile subscriber terminal, a transmission time by said timing adjustment received from said originating radio access port;

TOP SECRET

forwarding, by said mobile subscriber terminal, said modulated twice spread payload data signal to said originating access radio port;

receiving, by said originating access radio port, a further transmission signal comprising payload data;

despreading said further transmission signal by both said assigned orthogonal code and said PN-code;

monitoring, by a destination mobile subscriber terminal, a paging channel for paging messages indicating that there is payload data for said destination mobile subscriber terminal;

transmitting, by a destination access radio port, said paging message to a destination mobile subscriber terminal over said paging channel indicating that there is payload data for one of said plurality of destination mobile subscriber terminals;

receiving, by said destination mobile subscriber terminal, said paging message via said paging channel;

transmitting, by said destination mobile subscriber terminal, an acknowledgment to said destination radio access port;

receiving, by said destination access radio port, said acknowledgment from said one of said plurality of destination mobile subscriber terminals;

spreading, by said destination access radio port, said payload data extracted from an ATM packet with a uniquely assigned orthogonal code and with said PN-code;

transmitting, by said destination access radio port, said twice spread payload data to said one of said plurality of destination mobile subscriber terminals;

receiving, by said destination mobile subscriber terminal, said twice spread payload data;

despreading, by said destination mobile subscriber terminal, said payload data using said uniquely assigned orthogonal code and said PN-code; and

decoding, by said destination mobile subscriber terminal, said despread payload data.

25. The method according to claim 24, further comprising the step of presenting, by said destination mobile subscriber terminal, said payload data to a user.

26. A method for code division packet switching used for interfacing a terrestrial wireless network with a packet switched network, where said wireless network interfaces with a plurality of radio access ports, each of said radio access ports interfacing to a plurality of mobile subscriber terminals, comprising the steps of:

spreading, by said originating mobile subscriber terminal, a transmission signal by a PN-code assigned to an intended receiving port;

inserting, by said originating mobile subscriber terminal, an identifier of a few bits for identifying a user;

modulating, by said originating mobile subscriber terminal, said PN-code spread transmission signal;

forwarding, by said originating mobile subscriber terminal, said modulating PN-code spread transmission signal and marking the time origin of said forwarding;

demodulating, by said originating access radio port, said modulated PN-code spread transmission signal;

acquiring, by said originating access radio port, a preamble from said transmitted signal;

despreading, by said originating access radio port, a header from transmitted signal;

forwarding,, by said originating access radio port, an acknowledgment to one of said plurality of said originating mobile subscriber terminals, said acknowledgment comprising an assignment of an orthogonal code to said one of said plurality of originating mobile subscriber terminals and a timing adjustment;

receiving, by said originating mobile subscriber terminal, said acknowledgment, within a timeout period, from said originating access radio port,;

spreading, by said originating mobile subscriber terminal, a payload data signal by said assigned orthogonal code;

spreading, by said originating mobile subscriber terminal, the orthogonal spread payload data signal by the PN-code associating the user with payload data;

modulating, by said originating mobile subscriber terminal, said twice spread payload data signal;

adjusting, by said originating mobile subscriber terminal, a transmission time by said timing adjustment received from said originating radio access port;

forwarding, by said originating mobile subscriber terminal, said modulated twice spread payload data signal to said originating access radio port;

receiving, by said originating access radio port, a further transmission signal comprising payload data;

dispersing, by said originating access radio port, said further transmission signal by both said assigned orthogonal code and said PN-code;

monitoring, by a destination mobile subscriber terminal, a paging channel for paging messages indicating that there is payload data for said destination mobile subscriber terminal;

receiving, by said destination radio access port, said packet switch transmission signal from an access node via a network;

assigning, by said destination access radio port, a unique orthogonal code to one of said plurality of said destination mobile subscriber terminal;

spreading, by said destination access radio port, payload data destined for said one of said plurality of destination mobile subscriber terminals using both said uniquely assigned orthogonal code and a PN-code;

transmitting, by a destination access radio port, said paging message to said one of said plurality of said destination mobile subscriber terminals over said paging channel indicating that there is payload data for one of said plurality of destination mobile subscriber terminals;

receiving, by said destination mobile subscriber terminal, said paging message via said paging channel;

transmitting, by said destination mobile subscriber terminal, an acknowledgment to said destination radio access port;

receiving, by said destination access radio port, said acknowledgment from said one of said plurality of destination mobile subscriber terminals;

spreading, by said destination access radio port, said payload data extracted from an ATM packet with a uniquely assigned orthogonal code and with said PN-code;

modulating, by said destination access radio port, said twice spread payload data;

transmitting, by said destination access radio port, said twice spread payload data over air to said one of said plurality of destination mobile subscriber terminals;

receiving, by said destination mobile subscriber terminal, said twice spread payload data;

despreading, by said destination mobile subscriber terminal, said payload data using said uniquely assigned orthogonal code and said PN-code; and

decoding, by said destination mobile subscriber terminal, said despread payload data.

27. The method according to claim 26, further comprising the step of presenting, by said destination mobile subscriber terminal, said payload data to a user.

28. The method according to claim 5, wherein said first spreading step by said PN-code forms a preamble, which is prepended to a packet.

29. The method according to claim 9, wherein said first spreading step by said PN-code forms a preamble, which is prepended to a packet.

30. The method according to claim 24, wherein said first spreading step by said PN-code forms a preamble, which is prepended to a packet.

31. The method according to claim 26, wherein said first spreading step by said PN-code forms a preamble, which is prepended to a packet.